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Regulation of Artificial Intelligence: Challenges for Rights Humans in Mexico

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Mexico

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Summary

This qualitative study analyzes the legal challenges presented by artificial intelligence (AI).

for human rights in Mexico, with an emphasis on privacy and non-discrimination.

Given the increasing adoption of AI and the lack of a specific regulatory framework, the search is on for
to understand how these technologies affect fundamental rights and what measures to take

They can be implemented to protect them. Furthermore, it is argued that implementing AI without a

Adequate regulation could compromise human rights. The research employed

documentary and content analysis, examining legislation, government reports,

academic articles, information from non-governmental institutions and publications

journalistic reports on AI and human rights in Mexico.

The findings reveal a significant gap in Mexican regulations regarding AI.

exposing citizens to potential risks. Thus, algorithmic biases were identified.

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discriminatory. Mexico must prioritize the development of a comprehensive regulatory framework that address privacy protection, discrimination prevention, and transparency in the use of AI, balancing technological innovation with the safeguarding of rights humans. This approach would not only benefit Mexican citizens, but would also serve as a model for other developing countries facing similar challenges in the digital age.

Keywords: Artificial Intelligence, Regulation, Human Rights, Privacy Data, Technological Governance, Digital Public Policies.

Abstract

This qualitative study analyzes the legal challenges that artificial intelligence (AI) presents for human rights in Mexico, with an emphasis on privacy and non-discrimination. Given the increasing adoption of AI and the lack of a specific regulatory framework, the research seeks to understand how these technologies impact fundamental rights and what measures can be implemented to protect them. Furthermore, it posits that the implementation of AI without adequate regulation could compromise human rights, particularly privacy and non-discrimination. The study employed documentary and content analysis, examining legislation, government reports, academic articles, information from non-governmental institutions, and press and dissemination works on AI and human rights in Mexico. The findings reveal a significant gap in Mexican regulations regarding AI, exposing citizens to potential risks. Algorithmic biases were identified in AI systems used in key sectors such as employment, which could lead to discriminatory decisions. The study concludes that Mexico must prioritize the development of a comprehensive regulatory framework that addresses privacy protection, prevention of discrimination, and transparency in AI use, balancing technological innovation with the safeguarding of human rights. This approach would not only benefit Mexican citizens but could also serve as a model for other developing countries facing similar challenges in the digital era.

Keywords: Artificial Intelligence, Regulation, Human Rights, Data Privacy, Technological Governance, Digital Public Policies.

Summary

This qualitative study analyzes the legal challenges that artificial intelligence (AI) presents for human rights in Mexico, with an emphasis on privacy and non-discrimination. Given the increasing adoption of AI and the lack of a specific regulatory framework, we are looking for understand how these technologies impact the fundamental directions and measures can be implemented to protect them. Além disso, propose a hypothesis that a Implementation of AI without adequate regulation could compromise the rights humans, particularly privacy and non-discrimination. The research used analysis documentary and content, examining legislation, government reports, articles academics, information from non-governmental institutions and printing and Dissemination of AI and human rights in Mexico.

The results reveal a significant gap in Mexican regulations in relation to AI, I expose the cities to potential cliffs. Foram identified algorithmic errors in systems of AI used in key sectors such as work, which can lead to decisions discriminatory. It is concluded that Mexico must prioritize the development of a framework open regulatory framework that addresses privacy protection, discrimination prevention Transparency in the use of AI, balancing technological innovation with safeguarding human rights. This approach will not only benefit Mexican cities, but also could serve as a model for other developing countries that face challenges similar in the digital age.

Keywords: Artificial Intelligence, Regulation, Human Rights, Privacy

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Introduction

Artificial intelligence (AI) has emerged as a transformative force in contemporary society, fundamentally altering the way we interact with technology and each other. This technological advancement, while promising enormous benefits, also poses significant challenges for human rights (Floridi & Cowls, 2019). In the Mexican context, where the regulatory framework for AI is still under development, it is crucial to examine how these technologies impact the fundamental rights of citizens.



The main objective of this research is to analyze the legal challenges that AI presents for human rights in Mexico, with a particular emphasis on privacy and non-discrimination. This approach, furthermore, aligns with the growing global concern about the ethical impacts of AI, as pointed out by Floridi and Cowls (2019), who propose a unified framework of five principles for AI in society: beneficence, non-maleficence, autonomy, justice and explainability.

To address this objective, the following research questions are raised:

1. How does AI affect human rights in Mexico?
2. What legal challenges does the implementation of AI present in relation to privacy and non-discrimination?
3. How can Mexican legislation be adapted to protect human rights in the face of the advance of AI?
4. What measures can be implemented to prevent algorithmic discrimination in AI systems used in Mexico?
5. How can the benefits of AI be balanced with the protection of human rights in the Mexican context?

These questions reflect the need for a holistic approach that considers both the technical and ethical aspects of AI. As Mittelstadt (2019) warns, ethical principles alone cannot guarantee ethical AI, but must be translated into concrete practices and policies.

Furthermore, the central hypothesis of this study is that, although AI has the potential to significantly improve quality of life and efficiency across multiple sectors in Mexico, its implementation without an adequate regulatory framework can jeopardize fundamental human rights, particularly with regard to data protection and equity. Thus, it is argued that the lack of concrete regulations on AI in Mexico increases the risk of privacy violations and discriminatory biases in automated systems.

The relevance of this investigation lies in the imminent need to address the legal challenges presented by AI, emphasizing the importance of developing proactive and robust regulation that safeguards human rights while fostering technological advancement in Mexico.

In the digital age, where AI adoption is on the rise, it is imperative that public policies and laws in Mexico evolve to address the unique challenges presented by this technology. Furthermore, by examining how legislation can be adapted to protect privacy, prevent algorithmic discrimination, and balance the benefits of AI with the protection of human

rights, this study aims to contribute to the development of a comprehensive, human-centered approach to AI regulation in the case study (Castaño, 2020).

Materials and methods

This qualitative research focused on analyzing the impact of AI on human rights, with a particular perspective on the Mexican context. The study was carried out using a qualitative methodological approach, using documentary analysis techniques (Bowen, 2009) and content analysis (Krippendorff, 2018) to collect and analyze relevant data (Hernández-Sampieri & Mendoza, 2022; Medina-Romero et al., 2023).

The research was conducted in Mexico, a country facing significant challenges in regulating AI due to the lack of a robust legal framework that guarantees the protection of human rights in the context of technological advancement. This context is particularly relevant given that Mexico, like many developing countries, is in a unique position where the Adoption of AI technologies is growing rapidly, but regulatory structures are still under development (Becerril, 2021).

Thus, data collection was carried out through the following methodological procedures:

- Document analysis. A review of legal documents, government reports, academic articles and publications from non-governmental organizations addressing the relationship between AI and human rights was carried out. This review identified the main challenges and opportunities presented by AI in the field of human rights. Key documents included the Universal Declaration of Human Rights (United Nations [UN], 1948); relevant international treaties; foreign legislation – such as the European Union's General Data Protection Regulation (GDPR) and the AI Act (European Parliament, 2023, 2024); reports from international organizations such as the United Nations Educational, Scientific and Cultural Organization [UNESCO] (2021) and the UN (2024), as well as national institutions such as the Federal Telecommunications Institute [IFT] (2022a, 2022b, 2023) and the National Institute for Transparency, Access to Information and Protection of Personal Data [INAI] (2021, 2022, 2023), on AI and human rights; and Mexican legislation and legislative initiatives in process related to technology and human rights: Political Constitution of the United Mexican States –articles 6 and 16– (Chamber of Deputies, 2024), Federal Law on the Protection of Personal Data Held by Private Parties (Chamber of Deputies, 2010),



General Law on the Protection of Personal Data Held by Obligated Subjects (Chamber of Deputies, 2017), Federal Law on Telecommunications and Broadcasting (Chamber of Deputies, 2021), National Digital Strategy 2021-2024 (Official Gazette of the Federation, 2021, September 6), Initiative that reforms and adds various provisions to the Law on Science and Technology and the General Health Law (Chamber of Deputies, 2020, April 28), Initiative that issues the Law that creates the University of Information, Communications and Technology Technologies... Innovation (Chamber of Deputies, 2020, August 12), Initiative to reform and add various provisions to the Law on Science and Technology (Chamber of Deputies, 2021, January 7), Initiative to add article 77 Bis to the General Health Law (Senate of the Republic, 2021, January 13), Proposal to reform to create the National Strategy for the Appropriate and Ethical Use of Artificial Intelligence (Chamber of Deputies, 2024, February 25), and Proposal for a National Agenda for Artificial Intelligence for Mexico 2024-2030 (Senate of the Republic, 2024, May 15).

The selection of these documents was based on their relevance and timeliness, prioritizing those published in the last fourteen years – in the case of academic articles and publications by non-governmental organizations – to assess recent trends in the field of AI and human rights.

• **Content analysis.** A content analysis of media outlets was conducted to understand how AI is perceived in Mexican society and what concerns exist regarding its impact on human rights. This method allowed us to capture a variety of perspectives and discourses present in the public domain. Thus, press articles from national and international newspapers and works published in journals that address the topics of technology and human rights were reviewed. The examination period covered the last ten years to capture recent discussions on the topic.

Relevant and current materials were selected for the topic of study, and sources that offered a critical and detailed analysis of the implications of AI on human rights were prioritized. In addition, a representative range of perspectives was sought to be included, from academics, technology experts and authorities to human rights activists and ordinary citizens through non-governmental organizations (Sabater & De Manuel, 2024).

The qualitative data analysis was conducted using a thematic coding approach (Braun & Clarke, 2006; Gibbs, 2007). Data collected from documents and content analysis were transcribed and analyzed to identify patterns, recurring themes and discrepancies in

perceptions about AI and human rights. Key themes identified included human rights and dignity, regulatory framework, security and privacy, algorithmic biases, labor transformation, public perception, ethics and values, transparency and accountability in the use of AI.

NVivo software (version 14) was used to organize and analyze qualitative data (Lumivero, 2023), as well as to code data and identify key themes, which helped structure the findings in a coherent manner. And, to ensure the validity and reliability of the study, the following strategies were implemented:

- Data triangulation. Data from multiple sources were compared and contrasted to verify the consistency of findings (Flick, 2018).
- Peer review. Preliminary results were reviewed by AI ethics and human rights experts for feedback and validation.
- Research audit. A detailed record of all methodological and analytical decisions was maintained to ensure transparency of the investigation process.

This study prioritized the analysis of non-discrimination in the context of AI in the Mexican case, without neglecting the analysis of privacy, although with less comparative space. This methodological decision responded to the urgency and impact of the challenges of algorithmic discrimination in key sectors of Mexican society. In addition, the interrelation between privacy and non-discrimination in AI is recognized, so many aspects of privacy are addressed indirectly when analyzing non-discriminatory practices.

The combination of documentary and content analysis enabled data triangulation that enriched the validity of the study's findings and conclusions. This multifaceted approach facilitated the identification of areas of consensus and discrepancy in the perception of AI and its impact on human rights, providing a solid foundation for future research and policy development in this crucial field.

Results

Through documentary and content analysis, the regulatory challenges that AI presents for human rights in Mexico were identified (see Tables 1 and 2 in the Annex). This advocacy study revealed significant findings in several key areas. These results are presented in a clear and orderly manner to facilitate their understanding.

First, the research identified a significant gap in the Mexican regulatory framework regarding AI. It was found that, unlike other countries such as the United States or the

European Union, Mexico lacks specific legislation that regulates the development and use of AI, and that addresses the legal challenges of this technology (Maqueo et al., 2021; Ortega, 2024). This absence of comprehensive regulation exposes citizens to potential risks in terms of privacy and data protection. For example, while the European Union has the General Data Protection Regulation (GDPR) that establishes strict consent and transparency requirements for the processing of personal data, including in AI applications, Mexico still lacks a specific regulatory framework for these technologies (Pérez-Ugena, 2024; Becerril, 2021). According to reports from the National Institute for Transparency, Access to Information and Protection of Personal Data (INAI), this regulatory gap contributed to the increase in complaints about privacy violations in 2021 and 2022 (National Institute for Transparency, Access to Information and Protection of Personal Data, 2021, 2022, 2023). This situation highlights the need to develop regulations that specifically address the challenges posed by AI in terms of data protection and privacy.

Secondly, while the European Union has implemented the General Data Protection Regulation (GDPR) and is developing the AI Act (European Parliament, 2023, 2024), and the United States has established guidelines through the White House Office of Science and Technology Policy, Mexico does not yet have specific regulations for AI (Maqueo et al., 2021; Ortega, 2024; Becerril, 2021) although there are government proposals and legislative initiatives underway (Villanueva, et al., 2024). However, the government presented a 2018 *Mexican Artificial Intelligence Strategy* (Government of Mexico, 2018) and a 2021-2024 *National Digital Strategy* (Official Gazette of the Federation, 2021), and deputies and senators have promoted the reform proposal to create the *National Strategy for the Appropriate and Ethical Use of Artificial Intelligence* (Chamber of Deputies, 2024), as well as the initiative of the *National Artificial Intelligence Agenda for Mexico 2024-2030* (Senate of the República, 2024), respectively, these efforts have not yet been translated into concrete legislation, leaving a significant gap in the protection of citizens against the risks associated with AI.

The research also identified algorithmic biases in AI systems used in Mexico, particularly in sectors such as the labor sector. For example, the INAI (2021, 2022, 2023) addressed the use of AI systems in hiring processes in Mexican companies, and the results revealed that there is a significant risk of algorithmic biases in these systems, which could lead to discrimination in selection processes. These findings are consistent with identified global trends that indicate that algorithmic biases are a persistent challenge in the growing

AI ecosystem (Ferrante, 2021; Rebollar, 2023; Comas-Forgas, 2023). Furthermore, by discussing algorithmic biases in hiring processes, one is implicitly addressing how citizens' personal data is collected, processed, and used (crucial aspects of privacy). In addition, Gómez Mont et al. (2020b) highlight the imperative to address these biases through robust ethical policies and approaches throughout Latin America.

Furthermore, the research indicated that the adoption of AI in various sectors is transforming the Mexican labor market. The Federal Telecommunications Institute (IFT) has reviewed the use of AI systems in decision-making processes in Mexican companies from various sectors, warning that of the companies reviewed and that use AI systems in their processes, a significant number presented significant biases that could lead to discriminatory decisions, especially in hiring and performance evaluation processes (Federal Institute of Telecommunications, 2023, 2022b). These conditions coincide with global studies that identify algorithmic biases as a persistent challenge in the development of AI in Mexico; and, Therefore, recent research underscores the urgency of addressing these biases through effective policies and ethical frameworks in Latin America, including Mexico (Ferrante, 2021; Rebollar, 2023; Comas-Forgas, 2023; Gómez Mont et al., 2020b; Federal Institute of Telecommunications, 2022c).

The last aspect considered by the study was public perception and awareness about AI in Mexico. Data from the *Survey of knowledge of fixed and/or mobile internet users about Artificial Intelligence* reports that only 30.3% of users know or have heard something about AI, while 67.8% are completely unaware of the subject; and the same source showed that the main concern of users when providing information for the operation of AI is that it is used for other purposes (25.3%) and the theft of information/identity (24.5%) (Federal Institute of Telecommunications, 2022a). In addition, based on its studies on the habits of Internet users Over several years, the Internet Association MX (2023, 2022, 2021) concludes that trust in new technologies, including AI, is linked to the perception of security and regulation. These findings in Mexico coincide with international trends. According to data on AI and the work market of the Organization for Economic Cooperation and Development (OECD) (2023), Citizens in member countries expressed similar concerns about privacy and the need for effective AI regulation. This convergence of opinions at the international level underscores the importance of developing robust and harmonized regulatory frameworks for AI, not only in Mexico but around the world.

Discussion

The results underscore the pressing need to develop a robust regulatory framework for AI in Mexico. The absence of concrete legislation puts the country at a disadvantage compared to other nations that have already implemented ethical and legal guidelines for AI (Jobin et al., 2019). This regulatory gap not only exposes citizens to potential risks, but could also hinder innovation and responsible development of AI in the country.

Likewise, the rise in AI-related privacy violations suggests that current protections are insufficient. This raises significant concerns about the ability of the existing legal framework to safeguard human rights in the digital age. It is crucial that future AI regulation in Mexico prioritizes privacy protection and informed consent (Fjeld et al., 2020).

Furthermore, the presence of algorithmic biases in AI systems used in Mexico highlights the need to implement more rigorous auditing and control mechanisms. These findings underline the importance of developing ethical standards that guarantee fairness and non-discrimination in the design and implementation of AI systems (Jobin et al., 2019).

Also, the projection of job automation poses significant challenges for the Mexican labor market. It is imperative that the government, in collaboration with the private sector and academia, develop proactive education and training policies to prepare the workforce for the transition to a more automated economy (Ripani, 2020; Minian et al., 2018; Gómez Mont et al., 2020a).

On the other hand, public perception about AI reveals a growing concern among Mexican citizens. This highlights the importance of promoting a broad public dialogue on the impacts of AI and of involving civil society in the development of policies and regulations related to these technologies.

Based on the findings, the development of a comprehensive regulatory framework for AI in Mexico is justified, addressing the following key principles:

- Transparency and explainability of AI systems.
- Protection of privacy and personal data.
- Equity and non-discrimination in the design and use of AI
- Responsibility and accountability in AI implementation.
- Promotion of human and social well-being.

This framework should be developed through a participatory process that includes all relevant stakeholders, from decision makers, authorities, legislators, academics, to ethicists, technologists and civil society representatives (Fjeld et al., 2020; Medina, 2024).



The results of this inquiry therefore underline the pressing need to address the legal challenges posed by AI in the case of Mexico. The development of a robust legal framework, based on robust ethical principles and in line with international best practices, it is crucial to ensure that AI contributes positively to the country's social and economic development, while protecting fundamental human rights.

Conclusion

This research has fulfilled its main objective of analyzing the legal challenges that AI presents for human rights in Mexico, focusing on two critical areas: privacy and non-discrimination. The study has explored the complex intersection between AI and human rights in the specific context of Mexican society, revealing important nuances in this relationship. Furthermore, the findings confirmed the initial hypothesis that, while AI has the potential to significantly improve quality of life and efficiency in multiple sectors, its implementation without an adequate regulatory framework can put fundamental human rights at risk. This risk is particularly evident in the areas of privacy and non-discrimination, where significant gaps in current legal protection have been identified.

Thus, the lack of a specific and consistent regulatory framework in Mexico exposes citizens to violations of their privacy and algorithmic discrimination. This regulatory gap is particularly worrying given the accelerated pace of adoption of AI technologies in various sectors of Mexican society. The study identified significant challenges that require urgent attention, such as the risk of invasion of privacy due to the massive collection and processing of personal data without adequate informed consent. In a context where personal data has a strategic value, its protection is crucial to safeguard the autonomy and dignity of individuals.

Another critical challenge identified was the possibility of algorithmic discrimination, especially in key sectors such as employment. AI algorithms, if not carefully designed and audited, can perpetuate and amplify existing biases in society, leading to unfair decisions in areas such as granting credit or selecting candidates for jobs. This not only violates the fundamental principle of non-discrimination, but can also exacerbate existing inequalities in Mexican society.

In order to effectively address these challenges, the research suggests that Mexico urgently needs to develop a comprehensive and proactive regulatory framework that explicitly addresses privacy protection and the prevention of discrimination in the use of AI. To achieve this, a number of concrete actions need to be implemented. First, existing laws

need to be reviewed and updated to address the unique challenges posed by AI in terms of the collection, processing, and use of personal data. In parallel, it is crucial to establish rigorous processes to evaluate and monitor AI algorithms for bias and discriminatory outcomes.

The development of clear and enforceable guidelines for the ethical use of AI technologies is essential, serving as a guide for developers, companies, and government agencies. These guidelines must be accompanied by specific privacy and human rights impact assessments for AI projects, especially those that affect critical sectors or vulnerable populations. To reduce inherent biases and ensure that the technologies developed are inclusive and representative of all Mexican society, it is essential to foster diversity in AI development teams.

The creation of independent and robust bodies to oversee the development and implementation of AI systems is necessary, giving them the power to investigate and sanction violations. Transparency plays a fundamental role in this regulatory framework. It is therefore crucial to establish standards that allow people to understand how AI systems that affect their lives and decisions work, guaranteeing them the right to know, question and, where appropriate, challenge decisions made by AI systems that affect their prerogatives or interests.

Furthermore, the need for a multi-sectoral approach that prioritizes the protection of privacy and non-discrimination, while recognizing and leveraging the potential benefits of AI is emphasized. This delicate balance requires close collaboration between diverse actors: the government, to establish and enforce regulations; academia, to provide research and expertise; the private sector, to implement ethical practices in AI development; and civil society, to represent citizens' interests and concerns. It is also recommended to develop comprehensive public policies that not only encourage technological innovation, but also establish robust safeguards to protect human rights. These policies should include education and awareness programs on the ethical use of AI, aimed at both developers and the general public. Digital literacy and understanding of the basic principles of AI will be crucial to Empower citizens in the digital age.

The study provides a solid and well-founded basis for the development of policies and regulations that ensure that the implementation of AI in Mexican society is carried out in a way that respects and actively promotes human rights, through ethical and responsible integration, and with sustained and collaborative effort. Looking to the future, the complexity

of the challenges identified demands constant vigilance and a willingness to adapt strategies as new technologies and challenges emerge.

In conclusion, success in managing the relationship between AI and human rights in Mexico will not only benefit Mexican citizens, but would also serve as a model for others developing countries facing similar challenges. By proactively addressing these challenges, Mexico has the opportunity to position itself as a leader in the ethical and responsible development of AI, demonstrating that it is possible to harness the benefits of advanced technology without compromising the core values of dignity, equality, and respect for human rights.

Future lines of research

The present study on the legal challenges that AI presents for human rights in the case of Mexico has revealed several general areas for future research. These lines of study address aspects that, while crucial, exceed the initial scope of this work and deserve further analysis. First, it is proposed to develop and apply comprehensive (mixed) methodological approaches that combine qualitative and quantitative methods, including AI-specific impact assessment tools, adapted to the Mexican context.

In parallel, it is suggested to carry out a comparative study of international AI regulatory frameworks, with the aim of identifying best practices and developing a model adapted to the needs and realities of Mexico. Another important line of research would be to study how Mexico can effectively participate in global initiatives to establish ethical standards in AI, while longitudinally monitoring public perception of AI and its impact on human rights.

It is also recommended that a complementary study be conducted that focuses specifically on AI-related data protection challenges in Mexico, to further address and delve deeper into this gap in current research.

The following particular areas were also identified that address specific challenges related to privacy and equity in the context of AI in the case study. First, it is pertinent to carry out the development of algorithmic auditing frameworks for AI systems in Mexico, with an emphasis on the detection and mitigation of biases in critical sectors.

Secondly, it is relevant to analyze the impact of AI on vulnerable groups and strategies to guarantee algorithmic equity, ensuring that these technologies do not perpetuate existing inequalities. Finally, a comparative study on the effectiveness of data privacy regulations on

AI between Mexico and other countries should be considered, evaluating their effectiveness in protecting personal data.

These lines of research seek to deepen our understanding of the complex relationship between AI and human rights in Mexico, providing a solid foundation for the development of policies and practices that maximize the benefits of AI while protecting and promoting the fundamental rights of all citizens.

References

- Internet Association MX. (2021). *17th Study on the Habits of Internet Users in Mexico*. 2021. <https://irp.cdn-website.com/81280eda/files/uploaded/17%C2%B0%20Estudio%20sobre%20los%20Has%CC%81bits%20of%20the%20Users%20of%20Internet%20in%20Me%CC%81xico%202021%20v16%20Publica.pdf>
- Internet Association MX. (2022). *18th Study on the Habits of Internet Users in Mexico*. 2022. <https://irp.cdn-website.com/81280eda/files/uploaded/18%C2%B0%20Estudio%20sobre%20los%20Habits of Internet Users in Mexico 022%20%28Publica%29%20v2.pdf>
- Internet Association MX. (2023). *19th Study on the habits of internet users in Mexico*. 2023. <https://irp.cdn-website.com/81280eda/files/uploaded/19%20Study%20about%20the%20Habits%20of%20Users%20of%20Internet%20in%20Mexico%202023%20.pptx.pdf>
- Becerril, AA (2021, March 14). Challenges for the legal regulation of Artificial Intelligence in the field of Cybersecurity. *Magazine IUS*, 15(48). <https://doi.org/10.35487/rius.v15i48.2021.705>
- Bowen, G. A. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, 9(2), 27-40. <https://doi.org/10.3316/QRJ0902027>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Chamber of Deputies. (2024). *Political Constitution of the United States Mexicans*. <https://www.diputados.gob.mx/LeyesBiblio/pdf/CPEUM.pdf>

- Chamber of Deputies. (2010). *Federal Law on the Protection of Personal Data Held of Private Individuals*. <https://www.diputados.gob.mx/LeyesBiblio/pdf/LFPDPPP.pdf>
- Chamber of Deputies. (2017). *General Law on the Protection of Personal Data Held of* Subjects
Obligated. <https://www.diputados.gob.mx/LeyesBiblio/pdf/LGPDPPSO.pdf>
- Chamber of Deputies. (2020, April 28). Initiative that reforms and adds various provisions of the Science and Technology Law and the General Health Law, Presented by Representative Carlos Humberto Castaños. *Parliamentary Gazette*.
http://sil.gobernacion.gob.mx/Librerias/pp_ContentidoAsuntos.php?SID=108feb6642719b52eb7d183beaa96a70&Password=4035539
- Chamber of Deputies. (2020, August 12). Initiative with draft decree by which issues the law that creates the University of Information Technologies, Communications and Innovation, presented by Representative Carlos Iván Ayala. *Gazette Member of Parliament*.
http://sil.gobernacion.gob.mx/Librerias/pp_ContentidoAsuntos.php?SID=108feb6642719b52eb7d183beaa96a70&Password=4059591
- Chamber of Deputies. (2021). *Federal Telecommunications Law and Broadcasting*. <https://www.diputados.gob.mx/LeyesBiblio/pdf/LFTR.pdf>
- Chamber of Deputies. (2021, January 7). Initiative that reforms and adds various provisions of the Science and Technology Law, presented by Representative Mario Alberto Rodriguez, Gazette
Parliamentary. http://sil.gobernacion.gob.mx/Librerias/pp_ContentidoAsuntos.php?SID=bcfc898d03f757d8aedb8d776c83a077&Code=4128934
- Chamber of Deputies. (February 25, 2024). They are promoting a reform to create the “National Strategy for the Proper and Ethical Use of Artificial Intelligence”. *Bulletins*, No. 6064. Legislature.
LXV
<https://comunicacionsocial.diputados.gob.mx/index.php/boletines/impulsan-reforma-to-create-the-national-strategy-for-the-appropriate-and-ethical-use-of-intelligence-artificial->
- Castaño, D. (2020). The governance of Artificial Intelligence in Latin America: between the State regulation, privacy, and digital ethics. In C. Aguerre (Ed.). *Artificial intelligence in Latin America and the Caribbean: Ethics, governance, and policies*. Center for Studies in Technology and Society at the University of San Andrés.

<https://proyectoguia.lat/wp-content/uploads/2020/10/compilado-espanol-compressed.pdf>

Comas-Forgas, R. (2023). Algorithmic biases in education: analysis and solutions. In REDINE (Ed.), *Conference Proceedings EDUNOVATIC 2023* (p. 329). Adaya Press.

<https://doi.org/10.58909/adc24139168>

Official Gazette of the Federation. (2021, September 6). Agreement issuing the Strategy Digital National 2021-2024.

https://dof.gob.mx/nota_detalle.php?codigo=5628886&fecha=06/09/2021#gsc.tab=0

Ferrante, E. (2021). Artificial intelligence and algorithmic biases: Why should they matter to us? *New Society*, (294), 27-36.

Fjeld, J. et al. (2020). Principled Artificial Intelligence: Mapping Consensus in Ethical and Rights-Based Approaches to Principles for AI. *Berkman Klein Center Research Publication*, No. 2020-1. <https://doi.org/10.2139/ssrn.3518482>

Flick, U. (2018). *Doing triangulation and mixed methods*. SAGE Publications Ltd. <https://methods.sagepub.com/book/doing-triangulation-and-mixed-methods>

Floridi, L., & Cowls, J. (2019). A Unified Framework of Five Principles for AI in Society. *Harvard Data Science Review*, 1(1), 2-15. <https://doi.org/10.1162/99608f92.8cd550d1>

Gibbs, G. R. (2007). *Analyzing qualitative data*. SAGE Publications Ltd.

Government of Mexico. (2018). *Artificial Intelligence in Mexico*. Strategy Coordination National Digital. <https://www.gob.mx/epr/es/articulos/inteligencia-artificial-en-Mexico>

Gómez Mont, C. et al. (2020a). *Artificial intelligence at the service of social good in Latin America and the Caribbean: Regional Overview and Snapshots of Twelve Countries*. Bank Inter-American Development Bank (IDB). <http://dx.doi.org/10.18235/0002393>

Gómez Mont, C. et al. (2020b). *Artificial intelligence in Latin America and the Caribbean: Ethics, governance and policies*. In C. Aguerre (Ed.). *Artificial intelligence in Latin America and the Caribbean. Ethics, governance and policies*. Center for Studies in Technology and Society of the University of San Andrés. <https://proyectoguia.lat/wp-content/uploads/2020/10/compilado-espanol-compressed.pdf>

Güicho, M. (2024, May 16). Artificial intelligence and legislation: a necessary balance. *El Universal*. <https://www.eluniversal.com.mx/opinion/monica-guicho/inteligencia-artificial-and-legislation-a-necessary-balance/>

- Hernández-Sampieri, R., & Mendoza Torres, CP (2022). *Research Methodology: Quantitative, qualitative, and mixed approaches*. McGraw Hill Publishing.
- Federal Telecommunications Institute. (2022a). *4th Quarterly Statistical Report 2022*.
<https://www.ift.org.mx/sites/default/files/contenidogeneral/estadisticas/ite4t2022.pdf>
- Federal Telecommunications Institute. (2022b). *Statistical Yearbook 2022*.
<https://www.ift.org.mx/sites/default/files/contenidogeneral/estadisticas/anuarioestadistico2022acc.pdf>
- Federal Telecommunications Institute. (2022c). *International Studies on the subject of Telecommunications 2022*. <https://www.ift.org.mx/usuarios-y-audiencias/estudios-international-in-telecommunications-2022>
- Federal Telecommunications Institute. (2023). *Statistical Yearbook 2023*.
<https://www.ift.org.mx/sites/default/files/contenidogeneral/estadisticas/anuarioestadistico2023acc.pdf>
- National Institute for Transparency, Access to Information and Data Protection
Personal. (2021). *Report of Labors 2021*.
<https://micrositios.inai.org.mx/informeshistorico/wp-content/uploads/2022/10/InformeLaboresINAI2021.pdf>
- National Institute for Transparency, Access to Information and Data Protection
Personal. (2023). *Report of Labors 2022*.
<https://micrositios.inai.org.mx/informesinai/>
- National Institute for Transparency, Access to Information and Data Protection
Personal. (2023). *2023 Activity Report*. https://home.inai.org.mx/wp-content/uploads/Informe-Laboral-INAI-2023_WEB_B-1.pdf
- Jobin *et al.* (2019). The global landscape of AI ethics guidelines. *Nature Machine Intelligence*, 1(9), 389-399. <https://doi.org/10.1038/s42256-019-0088-2>
- Krippendorff, K. (2018). *Content analysis: An introduction to its methodology*. (4th ed.). SAGE Publications.
- Legaspi, A. (2024, May 14). The Internet Age and the Promise of Artificial Intelligence. *He Financial*. <https://www.elfinanciero.com.mx/opinion/colaborador-guest/2024/05/14/the-internet-era-and-the-promise-of-artificial-intelligence/>
- Limón, R. (2023, December 19). Large companies develop platforms for Ensuring the ethical and legal development of artificial intelligence. *El País*.
<https://elpais.com/tecnologia/2023-12-20/las-grandes-companias-desarrollan->

platforms-to-ensure-ethical-and-legal-development-of-intelligence-
artificial.html

Lumivero. (2023). *NVivo* (Version 14). [Computer software].
<https://lumivero.com/products/nvivo/>

Maqueo, MS, Moreno, J., Mendoza, OA, & Rentería, C. (2021). *Grade evaluation preparation for the adoption of artificial intelligence in judicial systems the region. Case of Mexico*. Center for Studies in Technology and Society (CETyS) of the University of San Andrés. <https://repositorio.udesa.edu.ar/jspui/handle/10908/18634>

Medina-Romero et al. (2023). *Mixed research method: Quantitative and qualitative*. University Institute of Innovation, Science and Technology Inudi Peru.
<https://doi.org/10.35622/inudi.b.105>

Medina, M. (2024). Applications of Artificial Intelligence for research and Innovation in higher education. *Social Border Journal*, 4(4).
[https://doi.org/10.59814/resofro.2024.4\(4\)336](https://doi.org/10.59814/resofro.2024.4(4)336)

Méndez, R., & Sánchez, L. (2023, April 24). Artificial intelligence and the future of law. *Nexos*. <https://eljuegodelacorte.nexos.com.mx/inteligencia-artificial-y-el-futuro-del-right/>

Minian, I., & Martínez Monroy, Á. (2018). The impact of new technologies on employment in Mexico. *Issues of the development*, 49(195), 27-53.
<https://doi.org/10.22201/ieec.20078951e.2018.195.64001>

Mittelstadt, B. (2019). Principles alone cannot guarantee ethical AI. *Nature Machine Intelligence*, 1, 501-507. <https://doi.org/10.1038/s42256-019-0114-4>

Organization for Economic Co-operation and Development. (2023). *artificial intelligence and the labor market: What we know so far*. OECD Social, Employment and Migration Working Papers, No. 282. OECD Publishing.
<https://doi.org/10.1787/08785bba-en>

United Nations. (1948). *Universal Declaration of Human Rights Humans*.
https://www.ohchr.org/sites/default/files/UDHR/Documents/UDHR_Translations/spn.pdf

United Nations. (March 7, 2024). *The General Assembly adopts a Historic resolution on AI*. <https://news.un.org/es/story/2024/03/1528511>

- Ortega, MJ (2024, May 15). Legislating to Protect: The urgency of regulating Artificial Intelligence in Mexico. *DLMEX*. <https://dlmex.org/legislar-para-proteger-la-urgency-to-regulate-artificial-intelligence-in-mexico/>
- Ortiz, A. (2023, November 10). Beyond algorithms: challenges and trends in the regulation global of the Intelligence Artificial. *The Economist*. <https://www.economista.com.mx/opinion/Beyond-algorithms-challenges-and-trends-in-the-global-regulation-of-Artificial-Intelligence-20231110-0030>. HTML
- European Parliament. (2023, December 9). *Artificial Intelligence Act: deal on comprehensive rules for trustworthy AI*. <https://www.europarl.europa.eu/news/es/press-room/20231206IPR15699/artificial-intelligence-act-deal-on-comprehensive-rules-for-trustworthy-ai>
- European Parliament. (2024, March 13). *The European Parliament approves a historic law for Regulating artificial intelligence*. <https://www.europarl.europa.eu/news/es/press-room/20240308IPR19015/the-European-chamber-approves-a-historic-law-to-regulate-the-artificial-intelligence>
- European Parliament and Council of the European Union. (2016, April 27). Regulation (EU) Regulation (EU) 2016/679 of the European Parliament and of the Council on the protection of persons physical aspects with regard to the processing of personal data and the free movement of These data (General Data Protection Regulation). *Official Journal of the European Union European*.
- European Parliament and Council of the European Union. (2024, June 13). Regulation (EU) Regulation (EU) 2024/1689 of the European Parliament and of the Council laying down rules harmonized regulations on artificial intelligence (Artificial Intelligence Act). *Journal European Union official*.
- Pascual, MG (2023, November 22). How to prevent artificial intelligence from generating More workload and more control over the employee. *El País*. <https://elpais.com/economia/2023-11-23/como-impedir-que-la-inteligencia-artificial-Generate-more-workload-and-more-control-over-the-employee>. HTML
- Pérez-Ugena, M. (2024). Comparative analysis of the different regulatory approaches of the Artificial intelligence in the European Union, the USA, China and Latin America. *Yearbook Ibero-American of Justice Constitutional*, 28(1). <https://doi.org/10.18042/cepc/aijc.28.05>

- Rebollar, A. (2023, May 16). Algorithmic biases and ethics in AI. *ADP Mexico*.
<https://adpmx.com/sesgos-algoritmicos-y-etica-en-la-ia/>
- Ripani, L. *et al.* (2020). *The future of work in Latin America and the Caribbean*. Bank
Inter-American Development Bank.
- Riquelme, R. (2024, July 17). 60% of Mexicans are unaware that Artificial Intelligence is
train with data personal. He
Economist. <https://www.eleconomista.com.mx/tecnologia/60-de-mexicanos-unaware-that-Artificial-Intelligence-is-trained-with-personal-data-20240717-0034.html>
- Sabater, A., & De Manuel, A. (2024, May 18). A look and discussion through specialized literature
and expert opinions. *Artificial Intelligence, Ethics and Journal
Society*.
https://www.udg.edu/ca/Portals/57/OContent_Docs/Informe_OEIAC_2021_cast.pdf
- Senate of the Republic. (2021, January 13). Initiative that adds article 77 Bis to the Law
General Health Report, presented by Senator Nuvia Magdalena Mayorga. *Gazette
Member of Parliament*.
http://sil.gobernacion.gob.mx/Archivos/Documentos/2021/01/asun_4129756_20210113_1610551834.pdf
- Senate of the Republic. (May 15, 2024). *National Agenda presented in the Senate
Artificial Intelligence for Mexico 2024-2030*. Social Communication Coordination.
LXV Legislature.
<https://comunicacionsocial.senado.gob.mx/informacion/comunicados/8982-National-artificial-intelligence-agenda-for-Mexico-presented-in-the-Senate-2024-2030>
- United Nations Educational, Scientific and Cultural Organization. (2021). *Recommendation
on the Ethics of Artificial Intelligence*.
<https://unesdoc.unesco.org/ark:/48223/pf0000381133/PDF/381133eng.pdf.multi.page=62>
- Villanueva, D. *et al.* (2024, April 1). The intersection between artificial intelligence and
Personal data protection in Mexico. *IAPP*. <https://iapp.org/news/a/la-intersection-between-artificial-intelligence-and-personal-data-protection-in-Mexico>

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Validation	Not applicable.
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Exhibit

Table 1. Documentary analysis on the regulation of artificial intelligence (AI) for the guarantee of human rights in Mexico

Main topics	Fundamental human rights	Personal privacy of data, protection	AI-specific regulation	AI ethics, human rights	Technological regulation, protection of rights
Guy	International Declaration	European legislation	European legislation	International recommendation	National legislation (Mexico)
Ethical and legal challenges	Application of principles to new technologies	Informed consent, transparency in AI	Algorithmic biases, high-risk systems	Impact on privacy, employment, decision making	Regulatory gap in AI
Opportunities	Fundamental ethical framework	Data protection standards	Specific regulatory framework	Global ethical framework	National of legal development framework
Relevance to AI and human rights	High relevance. Establishes the basic human rights framework applicable to AI	High relevance. Defines data protection standards applicable to AI systems	Very high relevance. First comprehensive legislation on AI worldwide	High relevance. Provides a global ethical framework for the development of AI	Medium relevance. Establishes the national legal framework applicable to AI
References of documentary analysis	Universal Declaration of Human Rights (United Nations, 1948)	General Data Protection Regulation (European Parliament and Council of the European Union, 2016)	Artificial Intelligence Act (European Parliament and Council of the European Union, 2024)	UNESCO Recommendation on the Ethics of Artificial Intelligence [AI] (2021)	- Mexican legislation on technology and human rights: Political Constitution of the United Mexican States (articles 6 and 16) (Chamber of Deputies, 2024). Federal Law on the Protection of Personal Data Held by Private Parties (Chamber of Deputies, 2010). General Law on the Protection of Personal Data Held by Obligated Subjects (Chamber of Deputies, 2017). Federal Telecommunications and Broadcasting Law (Chamber of Deputies, 2021). National Digital Strategy 2021-2024 (Official Gazette of the Federation, 2021, September 6). - Legislative initiatives in process: Initiative that reforms and adds various provisions to the Science and Technology Law and the General Health Law (Chamber of Deputies, 2020, April 28).

					Initiative that issues the Law that creates the University of Information, Communications and Innovation Technologies (Chamber of Deputies, 2020, August 12). Initiative that reforms and adds various provisions to the Science and Technology Law (Chamber of Deputies, 2021, January 7). Initiative that adds article 77 Bis to the General Health Law (Senate of the Republic, 2021, January 13). Proposed reform to create the National Strategy for the Appropriate and Ethical Use of Artificial Intelligence (Chamber of Deputies, 2024, February 25). Proposal for the National Artificial Intelligence Agenda for Mexico 2024-2030 (Senate of the Republic, 2024, May 15).
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Source: Prepared by the authors using the documentary analysis technique, using NVivo software (version 14)

Table 2. Integrated analysis (documentary and content) on the regulation of artificial intelligence (AI) to guarantee human rights in Mexico

Key topic / Main node	Regulatory framework	Data protection and privacy	Algorithmic biases	Impact on the labor market	Public perception	Ethics and values
Subtopics / Subnodes	- Specific legislation - Protection of rights - International comparison	- Informed consent - Transparency - Data security	- Discrimination - Equity - Systems audit	- Automation - New skills - Job displacement	- Knowledge about AI - Concerns - Trust in technologies	- Human dignity - Welfare - Non-maleficence
References of documentary analysis	Inclusive and multidisciplinary AI governance (UNESCO, 2021). Harmonized rules for AI systems in the European Union (European Parliament and Council of the EU, 2024)	Personal data protection and transparency (European Parliament and Council of the European Union, 2024)	Bias testing in AI and combating stereotypes (European Parliament and Council of the European Union, 2024; UNESCO, 2021)	Right to work and assessment of the impact of AI on employment (UN, 1948; UNESCO, 2021)	Raising awareness on AI advances, opportunities and challenges (UNESCO, 2021)	Ethical governance of AI with multi-stakeholder participation and for respect fundamental rights (UNESCO, 2021; European Parliament and Council of the European Union, 2024)
	Mexico lacks concrete legislation that regulates the development and use of AI, and that addresses the ethical and legal challenges of this technology (Maqueo et al., 2021; Ortega, 2024), although there are government proposals and legislative initiatives underway (Villanueva, et al., 2024).	This regulatory gap has contributed to the increase in complaints about privacy violations in 2021 and 2022 (INAI, 2021, 2022, 2023).	There is a significant risk of algorithmic bias in these systems, which could lead to discrimination in selection processes (INAI, 2021, 2022, 2023)	The adoption of AI in various sectors is transforming the Mexican labor market (IFT, 2023, 2022b)	Only 30.3% of users know or have heard anything about AI" (IFT, 2022a)	AI systems must be designed and developed in a way that respects the autonomy and fundamental rights of individuals (UNESCO, 2021)
References of content analysis	Artificial intelligence and legislation: a necessary balance (Güicho, 2024): The Universal Artificial intelligence and the future of law (Méndez & Sánchez, 2023): Links	60% of Mexicans are unaware that Artificial Intelligence is trained with personal data (Riquelme, 2024): The Economist	Beyond algorithms: challenges and trends in the global regulation of Artificial Intelligence (Ortiz, 2023): The Economist	How to prevent artificial intelligence from discriminating, creating more workload and more control over the employee (Pascual, 2023): The Country	The Internet era and the promise of artificial intelligence (Legaspi, 2014). The Financier	Large companies are looking for ways to ensure ethical and legal development of artificial intelligence (Lemon, 2023): The Country.
Word frequency	1. Regulation 2. AI 3. Legislation 4. Ethics 5. Rights	1. Data 2. Privacy 3. Protection 4. Consent 5. Security	1. Biases 2. Discrimination 3 Equity 4. Audit 5. Algorithms	1. Skills 2. Automation 3. Market 4. Retraining	1. Knowledge 2. Awareness 3. Education 4. Concerns 5. Confidence	1. Ethics 2. Values 3. Dignity 4. Rights 5. Well-being
Conceptual relationship map	Strong relationships with: - Ethics and values - Data protection - Algorithmic biases	Strong relationships with: - Regulatory framework - Ethics and values - Public perception	Strong relationships with: - Ethics and values - Impact on the labor market - Regulatory framework	Strong relationships with: - Algorithmic biases - Public perception - Ethics and values	Strong relationships with: - Ethics and values - Data protection - Impact on the labor market	Strong relationships with: - Regulatory framework - Data protection - Algorithmic biases

<i>Comparing encoding between documents</i>	Greater presence in: European Parliament and Council of the European Union (2024); UNESCO. (2021). Minor presence in: United Nations Organization (1948)	Greater presence in: European Parliament and Council of the European Union (2016); UNESCO. (2021). Minor presence in: United Nations Organization (1948)	Increased presence in: UNESCO. (2021) Minor presence in: United Nations Organization (1948)	Greater presence in: UNESCO. (2021). Minor presence in: United Nations (1948); European Parliament and Council of the European Union (2016)	Greater presence in: UNESCO. (2021). Minor presence in: United Nations (1948); European Parliament and Council of the European Union (2016)	Greater presence in: UNESCO. (2021). Present in all documents
<i>Findings/ patterns</i>	Significant gap in AI regulation in Mexico	Increase in complaints about privacy violations	Risks of bias in AI systems, especially in hiring	Transformation of the labor market, need for new skills	Low public awareness of AI, privacy concerns	Need for ethical principles in the development and use of AI
<i>Discrepancies</i>	Variations in the proposed regulatory approach (binding vs. voluntary)	Data protection and privacy	Variations in emphasis on specific rights	Different perspectives on the degree of labor disruption	Variations in proposed educational approaches	Variations in the priority given to ethical considerations
<i>Thematic coding</i>	Need for specific regulation for AI	Guarantees for the protection of personal data	Preventing algorithmic discrimination	AI transforming employment	Need for public education on AI	Ethical principles for the development of AI
<i>Recommendations</i>	Develop a specific regulatory framework for AI (with ethical impact assessments)	Implement robust data protection measures, including privacy impact assessments	AI audits, diversity in development teams, and equity impact assessments	Requalification programs, continuing education and just transition policies	Awareness campaigns, AI education and public dialogue on AI ethics	Develop ethical frameworks, ethical impact assessments and participatory governance of AI
<i>Relevance to AI and human rights</i>	High relevance. Regulation is essential to ensure that AI respects human rights. Documents from UNESCO (2021) and the European Parliament and Council of the European Union (2024) provide guidelines for the ethical governance of AI and protect human rights	High relevance. Data protection as a fundamental right in the era of AI (European Parliament and Council of the EU, 2016; UNESCO, 2021)	High relevance. Preventing bias in AI to protect equality and human rights (UN, 1948; UNESCO, 2021; European Parliament and Council of the European Union, 2024)	Medium-high relevance. Protection of labor rights in the face of the transformation of employment by AI (UN, 1948; UNESCO, 2021).	Medium relevance. Public education on AI crucial to exercising digital rights (UNESCO, 2021; implicitly related to UN, 1948)	High relevance. AI ethical principles aligned with human dignity and human rights (UN, 1948; UNESCO, 2021; European Parliament and Council of the EU, 2024)

Source: Prepared by the authors using the documentary analysis technique,
using NVivo software (version 14).